

*Dong Lin*

# Mountains of Metal

Where do the metals  
in my iPhone finally end up?



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Is iPhone trash?

Well, I am not talking about the one on your hand, but the one that you replace.

As a worldwide leading smartphone, iPhone gives a significant rise of buying spree with every new generation release. Behind that, there is a question that cannot be ignored: where have the old ones gone? People may throw their new furniture after they get a new one, but what about a smartphone?

To make an iPhone requires nearly 60 kinds of elements, most of the metal of them are recyclable. Elements have higher recycle rate are those "commonly used" metals, including Aluminum, lithium, copper, and gold, whose recycle rate is over 50%. On the opposite, side rare earth metals have lower recycle rate, mostly lower than 1%.

Apple Inc. has definitive recycle policy for used iPhone. It has been introduced on its website that by returning a used iPhone customer can get a discount of price for purchasing a new one. This is a win-win policy for everyone—— consumer saved their budget, Apple company reduced their cost of production, and for our environment, it can reduce the amount of electronic waste——metal mountain.

This policy sometime does not reach its original intention, and there is still much room for improvement. There are many difficulties for Apple company controlling all the whereabouts of every used iPhone which has been recycled. In some country and region, the recycled iPhone flow into irregular factories which do not use correct method to recycle electric gadgets, for example, an article discussed a recycle chain about iPhone components in China, some villagers heat the components they purchased to extract metals without any protection. This leads to emissions of hazardous



substance including dioxin and lead (Greene, 2012). On the other hand, mining rare earth metals is an industry that has significant pollution emissions. For example, a report noted that in Baotou, the centre of rare earth mining in China, levels of radioactive thorium in soil were 36 times higher than other area in same city (Scientificamerican, 2012). Generally speaking, the low recycle rate of rare earth metals in iPhones means numerous waste for the environment.

Therefore, it is clear that the outstanding achievement of iPhone's selling performance is a double-edged sword: while it produces economic benefits and pushing technology upgrades, it also brings challenges to the environment. The mountain of metal is the symbol of Apple's success, but also a significant task that needs to be solved in the future. For Apple, how to balance both sides will show its courage and wisdom, which is more important than the success of the economy.



Picture: A rare earth mining site. Reuters/David Grey

#### References:

- Compound Interest. (2015). *The Recycling Rates of Smartphone Metals*. Retrieved from <http://www.compoundchem.com/2015/09/15/recycling-phone-elements/>
- Desjardins J. (2016). *The Extraordinary Raw Materials in an iPhone 6s*. Retrieved from <http://www.visualcapitalist.com/extraordinary-raw-materials-iphone-6s/>.
- Greene J. (2015). *The environmental pitfalls at the end of an iPhone's life*. Retrieved from <https://www.cnet.com/news/the-environmental-pitfalls-at-the-end-of-an-iphones-life/>.

Krum R. (2013). *The Periodic Table of iPhones*. Retrieved from <http://coolinfographics.com/blog/2013/2/4/the-periodic-table-of-iphones.html>.

Scientificamerican. (2012). *Digging for Rare Earths: The Mines Where iPhones Are Born*. Retrieved from <https://www.scientificamerican.com/article/digging-for-rare-earths-the-mines-w-2012-09/>.

Udland M. (2014). *Rare Earth Metals Were Supposed To Be The 'Can't-Lose' Investment Of The Decade -- Look How That Turned Out*. Retrieved from <https://www.businessinsider.com.au/molycorp-decline-in-2014-2014-9>

# Flow of metal elements in iPhone's components

